



(12) PATENT ABSTRACT

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(54) LADDER LEVELLING MEANS

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(57) Claim

1. Ladder levelling means comprising an elongate ground engaging member having along one edge a plurality of teeth, a substantially tubular guide member within which the ground engaging member may slide, and a pawl member pivotally mounted on the guide member and spring biased into engagement with the teeth of the ground engaging member such that the ground engaging member may be slid downwardly relative to the guide member but can be slid upwardly relative thereto only after disengagement of the pawl member from the teeth of the ground engaging member.

The present invention relates to ladder levelling means and more particularly to such means which can be readily adjusted to allow a ladder to be positioned in a vertical orientation notwithstanding that the ladder is resting on uneven or sloping ground.

10 The present invention consists in ladder levelling means comprising an elongate ground engaging member having along one edge a plurality of teeth, a substantially tubular guide member within which the ground engaging member may slide, and a pawl member pivotally mounted on the guide member and spring biased into engagement with the teeth of the ground engaging member such that the ground engaging member may be slid downwardly relative to the guide member but can be slid upwardly relative thereto only after disengagement of the pawl member from the teeth of the ground engaging member.

20 The ground engaging member is preferably formed of a metal bar of rectangular cross sectional shape and with the teeth along one edge of the bar. At its lower end the ground engaging member is preferably pivotally connected to a foot which has a flat surface adapted to rest on the ground.

The guide member preferably includes means to enable the ladder levelling means to be connected to the leg of a ladder or alternatively the guide member may itself form part of the ladder. It is preferable that the guide means comprises a metal tube having the same cross sectional shape as the ground engaging member and of slightly greater cross sectional dimensions than that member.

30 The pawl member is preferably formed of metal and is provided with at least two teeth which interdigitate with the teeth on the ground engaging member. The pawl member is preferably formed with an abutment which engages with a corresponding abutment on the guide member when the teeth of the pawl member are fully interdigitated with the teeth

of the ground engaging member. This latter feature avoids undue strain being placed upon the pivot pin of the pawl member when a heavy load is placed on the ladder. The pawl member may be biased by any suitable spring such as a leaf spring or a coiled compression spring.

Locking means are preferably provided to prevent the pawl member from being accidentally disengaged from the ground engaging member when a ladder to which the levelling means is attached is being used. Such locking means may
10 conveniently comprise a pin which may be inserted through holes in the guide member to prevent the pawl from being disengaged from the ground engaging member.

Hereinafter given by way of example only is a preferred embodiment of the present invention described with reference to the accompanying drawings in which :

Figure 1 is a side elevational view of a ladder levelling device according to this invention;

Figure 2 is a vertical sectional and partly cut away view along II-II of Figure 3 of the ladder levelling device
20 of Figure 1; and

Figure 3 is a plan view of the ladder levelling device of Figure 1.

The ladder levelling device 10 comprises a ground engaging member 11 of rectangular cross sectional shape which is provided along one edge with a plurality of ratchet teeth 12. At its bottom end the ground engaging member 11 is pivotally attached to a foot 13 by a bolt 14. The foot comprises a planar base 15 and a pair of
30 triangular lugs 16 which lie in parallel spaced apart array standing upwardly from the base 15. The bolt 14 extends through holes formed in the lugs 16 adjacent their uppermost apices.

The ground engaging member 11 extends through a tubular guide member 17 which defines a rectangular tubular space slightly longer in cross section than the ground

engaging member 11. Flanges 18 and 28 are provided on the guide member and bore holes 19 to enable the device 10 to be bolted to the foot of a ladder. Along its other edge the guide member 17 is provided with a pair of parallel flanges 21 which define between them a recess. A pawl 22 is pivotally mounted on bolt 23 in the lower end of the recess defined by the flanges 21 and is spring biased by spring 24 into engagement with the teeth 12 on the ground engaging member 11. Holes 25 are provided through the
10 flanges 21 to receive a pin 26 just inwardly of the end of the pawl 22 to prevent the pawl 22 from being accidentally disengaged from the teeth 12 of the ground engaging member. A filler member 20 occupies the recess defined by flanges 21 above the pawl 22.

The ground engaging member 12 has a pair of outwardly projecting lugs 27 adjacent its upper end to prevent it from being fully withdrawn from the guide member 17.

In use the device 10 is attached to one leg of a single run ladder or to two legs on the same side of an
20 A-frame ladder. If the ladder is to be used on uneven or sloping ground the ground engaging member 11 of the device or of each device 10 is adjusted until the sides of the ladder are vertical.

The claims defining the invention are as follows:-

1. Ladder levelling means comprising an elongate ground engaging member having along one edge a plurality of teeth, a substantially tubular guide member within which the ground engaging member may slide, and a pawl member pivotally mounted on the guide member and spring biased into engagement with the teeth of the ground engaging member such that the ground engaging member may be slid downwardly relative to the guide member but can be slid upwardly relative thereto only after disengagement of the pawl member from the teeth of the ground engaging member.
2. Ladder levelling means as claimed in claim 1 in which the ground engaging member is formed of a metal bar of rectangular cross sectional shape with the teeth formed along one edge of the bar.
3. Ladder levelling means as claimed in claim 1 or claim 2 in which the ground engaging member is pivotably connected at its lower end to a foot which has a flat surface adapted to rest on the ground.
4. Ladder levelling means as claimed in any one of claims 1 to 3 in which the guide member includes means to enable the ladder levelling means to be connected to the leg of a ladder.
5. Ladder levelling means as claimed in any one of claims 1 to 3 in which the guide member is formed integrally with, or constitutes part of, the leg of a ladder.
6. Ladder levelling means as claimed in any one of claims 1 to 5 in which the pawl member is provided with at least two teeth which interdigitate with the teeth on the ground engaging member.
7. Ladder levelling means as claimed in any one of claims 1 to 6 in which the pawl member is provided with an abutment which engages with a corresponding abutment on the guide member when the teeth of the pawl member are fully interdigitated with the teeth of the ground engaging member.

8. Ladder levelling means as claimed in any one of claims 1 to 7 in which locking means are provided on the ladder levelling means to prevent the pawl member from being accidentally disengaged from the ground engaging members.

9. Ladder levelling means as claimed in claim 8 in which the locking means comprise a pin which may be inserted through holes in the guide member.

10. Ladder levelling means substantially as hereinbefore described with reference to the accompanying drawings.

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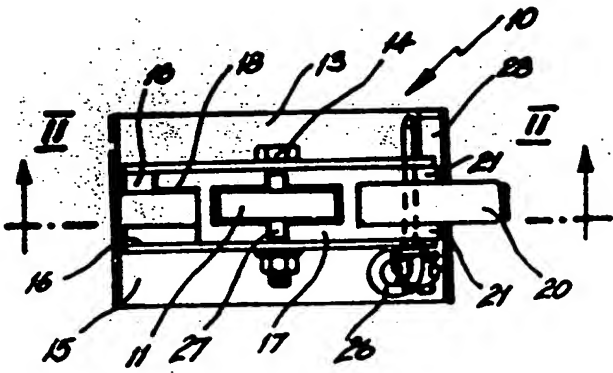


FIG. 3

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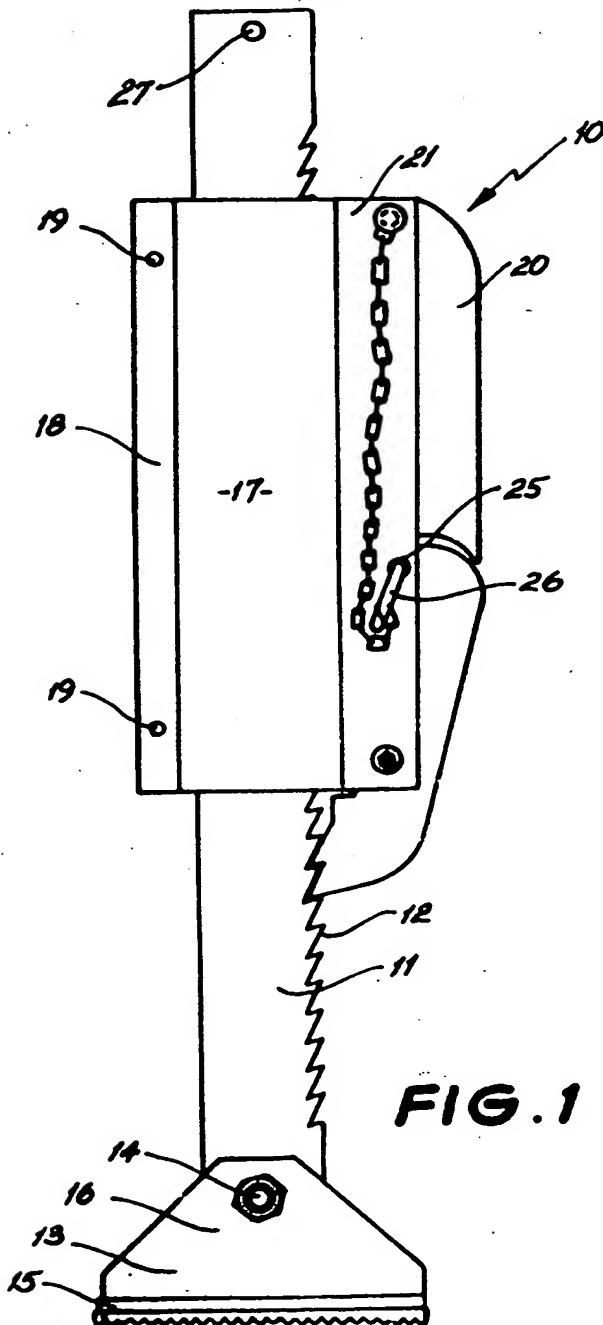


FIG. 1

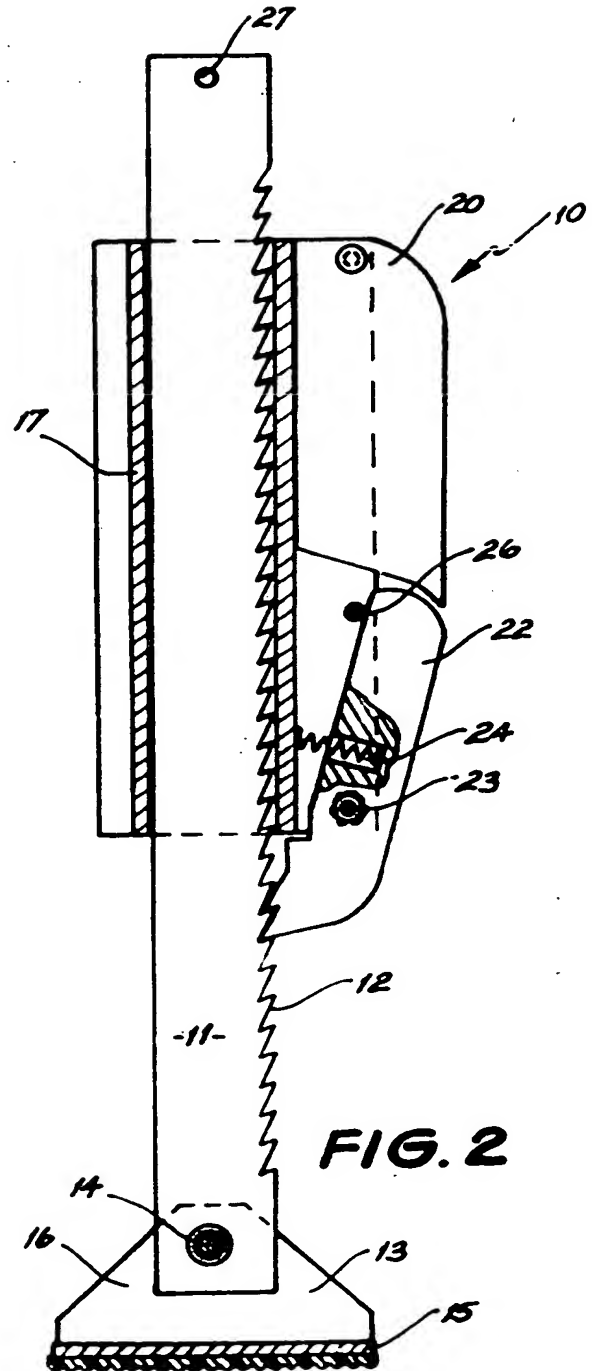


FIG. 2